Message

From: Jennings, Eleanor [Eleanor.Jennings@parsons.com]
Sent: 5/16/2017 2:49:14 PM
To: Dan Pope [DPope@css-inc.com]; Wayne Miller [Miller.Wayne@azdeq.gov]; d'Almeida, Carolyn K. [dAlmeida.Carolyn@epa.gov]; Henning, Loren [Henning.Loren@epa.gov]
CC: Bo Stewart [Bo@praxis-enviro.com]; Davis, Eva [Davis.Eva@epa.gov]; Cosler, Doug [Doug.Cosler@TechLawInc.com]; Jennings, Eleanor [Eleanor.Jennings@parsons.com]; Steve Willis [steve@uxopro.com]
Subject: Draft EBR checklist for today's group call
Attachments: Criteria for EBR.docx

Dan,
Good thoughts, and thanks for pulling them together so eloquently. You've hit on many of the same topics as Bo, Doug, and myself … I'm going to put this under the "Great Minds Think Alike" category!

For some of you who have not yet seen this, here is the draft checklist I had sent out to Doug, Bo, and Dan to start the process of gathering our thoughts. The original goal was for each of us to tackle certain sections, and after these versions were compiled together, a second draft would be then sent to the group for comments. It was during this process, though, that we all started having questions, many of which were the same from person to person. After a quick talk with Wayne, we then decided to get some input from EPA before we went too far down any particular rabbit hole.

So, (at least the way I see it), this afternoon's conference call will discuss the attached draft checklist. Some questions I had come up with, as a very rough agenda:

- In light of the AF possibly starting to look at our models, and as a result, starting to possibly question their own time estimates – does this change how we would like to proceed with this checklist? Or, do we stay the course?
- Are we missing any analyses that ADEQ/EPA would like to add?
- In regards to when the analyses are proposed to be performed, how does ADEQ/EPA feel about our rough estimates ("once per quarter for XYZ analysis" for example …. are we all in the same ballpark, or are we thinking totally different things)?
- Are we correct in thinking we can't pick specific analyses locations at this time? If yes, let's then discuss how to approach this.
- What general format is ADEQ/EPA thinking of, in regards to a deliverable?

Again, that's just my thoughts. Does anyone else have any thoughts as to what we should be discussing?

Thanks to all,
Eleanor

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"Safety Isn't Expensive. It's Priceless."

From: Dan Pope [mailto:DPope@css-inc.com]
Sent: Monday, May 15, 2017 11:20 PM
To: Wayne Miller <Miller.Wayne@azdeq.gov>; d'Almeida, Carolyn K. <dAlmeida.Carolyn@epa.gov>; Henning, Loren <Henning.Loren@epa.gov>
Cc: Bo Stewart <Bo@praxis-enviro.com>; Davis, Eva <Davis.Eva@epa.gov>; Cosler, Doug

<Doug.Cosler@TechLawInc.com>; Jennings, Eleanor <Eleanor.Jennings@parsons.com>
Subject: RE: 2017-5-11 - Williams AFB - FYI - EPA requests tues or wed conf call to discuss - EBR checklist input - ST012 - cda epa

Wayne:

I think this kind of a checklist is a really good idea to help clarify our thinking.

My concerns about specificity and so on that I've mentioned before are related to these things:

If we don't already know...

a) the range of data values we might get back from a proposed analysis,

b) the data interpretation, and understanding of subsurface conditions we can get from the data, and

c) how the data will be used to make decisions at the site,

then we really aren't in a position to propose such analysis even to our group, far less to AF, because it's unreasonable to propose to use a tool when we don't know what the tool can do for us.

So if we can fill out this checklist (i.e., each individual fill out the list for those particular analyses proposed by that individual), then the group (and eventually upper management, the AF, etc.) can come to a mutual understanding about the analytical tools available, and what value they have for monitoring and adjusting the remedy.

The components of the checklist can be used by our group to develop a decision tree, like the one the AF presented to us, so that the differing elements of the two decision trees can easily be compared and contrasted. Otherwise we run the risk of having multiple lists, documents, tables, and etc. from AF and our sides of the issue, and having trouble really comparing the two approaches. Someone already noted how difficult it is to keep up with all the various iterations and changes and documents the AF has devised! It might be easier to pin them down if we can compare decision tree to decision tree - maybe. I might be a bit optimistic here.

After we have developed our decision tree internally, then we can:

1) discuss the two decision trees with the AF,

2) argue the pros and cons of each analysis/measurement and the decisions to be made based on each analysis/measurement, (as well as monitoring points and frequency) and

3) negotiate the final decision tree based on the elements in our decision tree and the AF's decision tree.

MEASUREMENTS/ANALYSES

The other members of our team have already proposed various analyses and measurements that they need to fill in the decision tree; my needs for analyses/measurements include these items:

1) The field hydrogeological data (GW elevations, etc.)

2) The field parameters and other geochemistry (Eleanor's geochemistry list, with two additions)

a. Groundwater temperature
b. pH
c. ORP values
d. DO concentrations
e. Nitrate concentrations
f. Ferrous iron concentrations
g. Sulfate concentrations
h. ~~Benzene concentrations~~ (considered below, under COCs)

i. Hydrogen sulfide concentrations
j. Methane
k. Alkalinity

3) COCs, in LNAPL and in GW (in addition, we may want to do soil cores at the last of the EBR process)

Note that all of the above measurements and analyses I listed would be taken routinely at any petroleum hydrocarbon site (except for frequent monitoring of the COCs in LNAPL), so I'm not asking for anything that is unusual compared to other sites. And of course AF is already doing these, or most of them. So there should be little to no disagreement about these particular measurements and analyses.

MONITORING

The other aspect of this is the locations and frequency of monitoring.

LOCATIONS

Locations, IMHO, would be site-wide (everywhere) for a few monitoring events, at least for GW.

For LNAPL sampling locations, I think, for the reasons I stated on the previous call, that the LNAPL moving into the monitoring wells is the low hanging fruit for a) ease of sampling LNAPL and b) ease of remediation of LNAPL (i.e., of stripping COCs from the LNAPL). If AF can't make EBR work expeditiously and effectively in that mobile LNAPL (that is, stripping the COCs from the LNAPL), I suspect that the other LNAPL hidden here and there in the subsurface will not be remediated expeditiously by EBR either.

Eventually, of course, we would need to do some sampling of LNAPL sitewide, which probably would require new sampling locations. Eva and others have mentioned several possible new sampling locations for both GW and LNAPL, so I won't add any here.

FREQUENCY

I would be in favor of frequent monitoring for the first one or two quarters (monthly, perhaps), so we can discern any major changes in geochemistry, COC concentrations, LNAPL mobility, etc. that may be associated with the initial injections. [Eleanor may want to chime in here to show the usefulness of her proposed microbiological analyses in terms of understanding if the microbiological changes are indicative of remedy success or of a need to tweak the approach.]

After the first quarter or two, I suspect that quarterly monitoring would be sufficient, unless the earlier monitoring had revealed some significant problem so that major changes in the EBR approach had to be implemented (i.e., causing a reboot in the EBR implementation, and starting a new frequent-monitoring-for-the-first-one-or-two-quarters cycle).

P.S.

Finally, it seems to me that our modelers are developing a strong case for critiquing the AF's proposed (modeling-based) timeline for remediation. I think that their work will be very helpful for convincing AF and upper management that there is good reason to anticipate problems meeting the remedial timeframe with only EBR and MNA.

I note that AF has recently indicated that there may be some locations at the site where something more than EBR (SEE!) might be necessary -- that is, it is highly likely that EBR/MNA even at maximum success (within the 20-year timeframe)

will leave large chunks of the subsurface with high LNAPL/COCs. Which is what we've been saying all along, of course. So maybe we're starting to break through to AF. Maybe.

DFP

From: Wayne Miller [mailto:Miller.Wayne@azdeq.gov]
Sent: Thursday, May 11, 2017 12:47 PM
To: d'Almeida, Carolyn K. <dAlmeida.Carolyn@epa.gov>
Cc: Bo Stewart <Bo@praxis-enviro.com>; Eleanor Jennings <ejennings@teci.pro>; Davis, Eva <Davis.Eva@epa.gov>
Subject: 2017-5--11 Williams AFB - Request assistance for Eleanor et al -- EBR phased implementation checklist detail input - ST012

Can folk please help me clarify the "check list" detail level? Eleanor may not have the site specific items or document access to provide an exacting and specific: "here, …we want xyz sample quantity….here we need….abc geochemical analyses for 12 something analysis……. At this ABC Feet depth Bacterial population must expand 1X10+6 or 1000 percent within 8 months or ABC stratum is a failure…….

Anyway .. can Eleanor obtain some input and clarification? Please forward to the folk that can help.
Exactly how much detail does EPA want for this checklist? Can you please provide input on which path EPA believes is more efficient? (1) A general list of tests/analyses can be brainstormed, but leave off specifics such as proposed sampling locations, intervals, etc. Then EPA's subject matter experts can flesh out and detail the draft list.

OR (2) Attempt to have all subject matter experts provide detail up front confab or submit to Eleanor's group and then try to build check list.

Thank you… Just looking for what is best for the people that know more than I.

sample	Sample location (well) ID or proposed new well	Sample depth (ft bgs)	Geochemical analysis A	Geochemical analysis B	Geochemical analysis B	Elapsed time from project start		
1						*Before start - Base population*	*T1 + X days count /Percent growth*	*T1 + Y days count /Percent g*
2						*Before start - Base population*	*T2 + X days - count /Percent growth*	*T2 + Y days count /Percent g*
3						*Before start - Base population*	*T3 + X days - count /Percent growth*	*T2 + Y days count /Percent g*

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